SEQUENCE LISTING

<110> GOVERNMENT OF THE UNITED STATES OF AMERICA, REPRESENTED BY THE SECRETARY, DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIMITROV, Dimiter S.
ZHANG, Mei-Yun

<120> IMMUNOGLOBULINS WITH POTENT AND BROAD ANTIVIRAL ACTIVITY

<130> 251149

<150> US 60/506,946
<151> 2003-09-29

<150> PCT/US04/31878
<151> 2004-09-29

<160> 19

<170> PatentIn version 3.3

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Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Gly Ser Leu
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Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile Tyr
35 40 45

Gly Ala Ser Thr Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Gly Arg Leu Glu Pro Glu
65 70 75 80

Asp Leu Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Thr Ser Pro Tyr Thr
85 90 95

Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Gly Gly Gly Gly
100 105 110

Ser Gly Gly Gly Ala Ser Gly Gly Gly Gly Ser Val Arg Leu Leu Glu
115 120 125

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Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser Ser Val Gln Val Ser
    130                 135                 140

Cys Lys Ala Ser Gly Gly Thr Phe Ser Met Tyr Gly Val Asn Trp Val
145                 150                 155                 160

Arg Gln Ala Pro Gly His Gly Leu Glu Trp Met Gly Gly Ile Ile Pro
                165                 170                 175

Ile Phe Gly Thr Ser Asn Tyr Ala Gln Lys Phe Arg Gly Arg Val Thr
            180                 185                 190

Phe Thr Ala Asp Gln Ala Thr Ser Thr Ala Tyr Met Glu Leu Thr Asn
        195                 200                 205

Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Phe Gly
    210                 215                 220

Pro Asp Trp Glu Asp Gly Asp Ser Tyr Asp Gly Ser Gly Arg Gly Phe
225                 230                 235                 240

Phe Asp Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
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Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Gly Ser Leu
            20                  25                  30

Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile Tyr
        35                  40                  45

Gly Ala Ser Thr Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser
    50                  55                  60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Gly Arg Leu Glu Pro Glu
65                  70                  75                  80

Asp Leu Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Thr Ser Pro Tyr Thr
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85 90 95

Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Gly Gly Gly Gly
100 105 110

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu
115 120 125

Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser Ser Val Gln Val Ser
130 135 140

Cys Lys Ala Phe Gly Gly Thr Phe Ser Met Tyr Gly Phe Asn Trp Val
145 150 155 160

Arg Gln Ala Pro Gly His Gly Leu Glu Trp Met Gly Gly Ile Ile Pro
165 170 175

Ile Phe Gly Thr Thr Asn Tyr Ala Gln Lys Phe Arg Gly Arg Val Thr
180 185 190

Phe Thr Ala Asp Gln Ala Thr Ser Thr Ala Tyr Met Glu Leu Thr Asn
195 200 205

Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Phe Gly
210 215 220

Pro Asp Trp Glu Gly Gly Asp Ser Tyr Asp Gly Ser Gly Arg Gly Phe
225 230 235 240

Phe Asp Phe Trp Gly Gln Gly Thr Leu Val Asn Val Ser Ser
245 250

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Pro Asp Pro Glu Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro
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Pro Cys Pro

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Asp Pro Glu Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro
            20                  25                  30

Cys Pro
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Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
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Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
            20                  25                  30

Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr
        35                  40                  45

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
    50                  55                  60

Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
65                  70                  75                  80

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
                85                  90                  95

Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
            100                 105                 110

Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu
        115                 120                 125

Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
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130 135 140

Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn
145 150 155 160

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
165 170 175

Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val
180 185 190

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
195 200 205

Lys Ser Leu Ser Leu Ser Pro Gly
210 215

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Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Ala Gly Glu Arg
1 5 10 15

Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Gly Ser Leu
20 25 30

Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile Tyr
35 40 45

Gly Ala Ser Thr Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Gly Arg Leu Glu Pro Glu
65 70 75 80

Asp Leu Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Thr Ser Pro Tyr Thr
85 90 95

Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Gly Gly Gly Gly
100 105 110

Ser Gly Gly Gly Ala Ser Gly Gly Gly Gly Ser Val Arg Leu Leu Glu
115 120 125

```
Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser Ser Val Gln Val Ser
    130                 135                 140

Cys Lys Ala Ser Gly Gly Thr Phe Ser Met Tyr Gly Val Asn Trp Val
145                 150                 155                 160

Arg Gln Ala Pro Gly His Gly Leu Glu Trp Met Gly Gly Ile Ile Pro
                165                 170                 175

Ile Phe Gly Thr Ser Asn Tyr Ala Gln Lys Phe Arg Gly Arg Val Thr
            180                 185                 190

Phe Thr Ala Asp Gln Ala Thr Ser Thr Ala Tyr Met Glu Leu Thr Asn
        195                 200                 205

Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Phe Gly
    210                 215                 220

Pro Asp Trp Glu Asp Gly Asp Ser Tyr Asp Gly Ser Gly Arg Gly Phe
225                 230                 235                 240

Phe Asp Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Pro Asp
                245                 250                 255

Pro Glu Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
            260                 265                 270

Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro
        275                 280                 285

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
    290                 295                 300

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
305                 310                 315                 320

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
                325                 330                 335

Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
            340                 345                 350

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
        355                 360                 365

Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
```

370 375 380

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu
385 390 395 400

Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr
405 410 415

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
420 425 430

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
435 440 445

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
450 455 460

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
465 470 475 480

Gln Lys Ser Leu Ser Leu Ser Pro Gly
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Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Ala Gly Glu Arg
1 5 10 15

Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Gly Ser Leu
20 25 30

Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile Tyr
35 40 45

Gly Ala Ser Thr Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Gly Arg Leu Glu Pro Glu
65 70 75 80

Asp Leu Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Thr Ser Pro Tyr Thr
85 90 95

```
Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Gly Gly Gly Gly
           100                 105                 110

Ser Ser Gly Gly Ala Ser Gly Gly Gly Gly Ser Val Arg Leu Leu Glu
       115                 120                 125

Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser Ser Val Gln Val Ser
   130                 135                 140

Cys Lys Ala Ser Gly Gly Thr Phe Ser Met Tyr Gly Val Asn Trp Val
145                 150                 155                 160

Arg Gln Ala Pro Gly His Gly Leu Glu Trp Met Gly Gly Ile Ile Pro
                165                 170                 175

Ile Phe Gly Thr Ser Asn Tyr Ala Gln Lys Phe Arg Gly Arg Val Thr
           180                 185                 190

Phe Thr Ala Asp Gln Ala Thr Ser Thr Ala Tyr Met Glu Leu Thr Asn
       195                 200                 205

Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Phe Gly
   210                 215                 220

Pro Asp Trp Glu Asp Gly Asp Ser Tyr Asp Gly Ser Gly Arg Gly Phe
225                 230                 235                 240

Phe Asp Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Glu Pro
                245                 250                 255

Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Pro Asp Pro
           260                 265                 270

Glu Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro
       275                 280                 285

Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
   290                 295                 300

Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
305                 310                 315                 320

Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr
                325                 330                 335

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
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340 345 350

Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
355 360 365

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
370 375 380

Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
385 390 395 400

Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu
405 410 415

Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
420 425 430

Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn
435 440 445

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
450 455 460

Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val
465 470 475 480

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
485 490 495

Lys Ser Leu Ser Leu Ser Pro Gly
500

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Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Ala Gly Glu Arg
1 5 10 15

Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Gly Ser Leu
20 25 30

Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile Tyr
35 40 45

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Gly Ala Ser Thr Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser
    50                  55                  60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Gly Arg Leu Glu Pro Glu
65                  70                  75                  80

Asp Leu Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Thr Ser Pro Tyr Thr
                85                  90                  95

Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Gly Gly Gly Gly
            100                 105                 110

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu
        115                 120                 125

Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser Ser Val Gln Val Ser
    130                 135                 140

Cys Lys Ala Phe Gly Gly Thr Phe Ser Met Tyr Gly Phe Asn Trp Val
145                 150                 155                 160

Arg Gln Ala Pro Gly His Gly Leu Glu Trp Met Gly Gly Ile Ile Pro
                165                 170                 175

Ile Phe Gly Thr Thr Asn Tyr Ala Gln Lys Phe Arg Gly Arg Val Thr
            180                 185                 190

Phe Thr Ala Asp Gln Ala Thr Ser Thr Ala Tyr Met Glu Leu Thr Asn
        195                 200                 205

Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Phe Gly
    210                 215                 220

Pro Asp Trp Glu Gly Gly Asp Ser Tyr Asp Gly Ser Gly Arg Gly Phe
225                 230                 235                 240

Phe Asp Phe Trp Gly Gln Gly Thr Leu Val Asn Val Ser Ser Pro Asp
                245                 250                 255

Pro Glu Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
            260                 265                 270

Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro
        275                 280                 285

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
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290 295 300

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
305 310 315 320

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
325 330 335

Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
340 345 350

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
355 360 365

Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
370 375 380

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu
385 390 395 400

Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr
405 410 415

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
420 425 430

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
435 440 445

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
450 455 460

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
465 470 475 480

Gln Lys Ser Leu Ser Leu Ser Pro Gly
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Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Ala Gly Glu Arg
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Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Gly Ser Leu
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Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile Tyr
      35                  40                  45

Gly Ala Ser Thr Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser
  50                  55                  60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Gly Arg Leu Glu Pro Glu
65                  70                  75                  80

Asp Leu Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Thr Ser Pro Tyr Thr
                85                  90                  95

Ile Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Gly Gly Gly Gly
          100                 105                 110

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu
      115                 120                 125

Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser Ser Val Gln Val Ser
  130                 135                 140

Cys Lys Ala Ser Gly Gly Thr Phe Ser Met Tyr Gly Phe Asn Trp Val
145                 150                 155                 160

Arg Gln Ala Pro Gly His Gly Leu Glu Trp Met Gly Gly Ile Ile Pro
                165                 170                 175

Ile Phe Gly Thr Thr Asn Tyr Ala Gln Lys Phe Arg Gly Arg Val Thr
          180                 185                 190

Phe Thr Ala Asp Gln Ala Thr Ser Thr Ala Tyr Met Glu Leu Thr Asn
      195                 200                 205

Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Phe Gly
  210                 215                 220

Pro Asp Trp Glu Gly Gly Asp Ser Tyr Asp Gly Ser Gly Arg Gly Phe
225                 230                 235                 240

Phe Asp Phe Trp Gly Gln Gly Thr Leu Val Asn Val Ser Ser Glu Pro
                245                 250                 255

Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Pro Asp Pro
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            260                 265                 270

Glu Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro
        275                 280                 285

Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
    290                 295                 300

Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
305                 310                 315                 320

Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr
                325                 330                 335

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
            340                 345                 350

Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
        355                 360                 365

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
    370                 375                 380

Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
385                 390                 395                 400

Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu
                405                 410                 415

Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
            420                 425                 430

Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn
        435                 440                 445

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
    450                 455                 460

Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val
465                 470                 475                 480

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
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Lys Ser Leu Ser Leu Ser Pro Gly
            500
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Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Ala Gly Glu Arg
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Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Gly Ser Leu
            20                  25                  30

Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile Tyr
        35                  40                  45

Gly Ala Ser Thr Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser
    50                  55                  60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Gly Arg Leu Glu Pro Glu
65                  70                  75                  80

Asp Leu Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Thr Ser Pro Tyr Thr
                85                  90                  95

Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Gly Gly Gly Gly
            100                 105                 110

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu
        115                 120                 125

Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser Ser Val Gln Val Ser
    130                 135                 140

Cys Lys Ala Ser Gly Gly Thr Phe Ser Met Tyr Gly Phe Asn Trp Val
145                 150                 155                 160

Arg Gln Ala Pro Gly His Gly Leu Glu Trp Met Gly Gly Ile Ile Pro
                165                 170                 175

Ile Phe Gly Thr Ser Asn Tyr Ala Gln Lys Phe Arg Gly Arg Val Thr
            180                 185                 190

Phe Thr Ala Asp Gln Ala Thr Ser Thr Ala Tyr Met Glu Leu Thr Asn
        195                 200                 205

Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Phe Gly
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210 215 220

Pro Asp Trp Glu Asp Gly Asp Ser Tyr Asp Gly Ser Gly Arg Gly Phe
225 230 235 240

Phe Asp Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
245 250

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Thr Leu Thr Gln Ser Pro Thr Thr Leu Ser Ala Ser Pro Gly Glu Arg
1 5 10 15

Val Ile Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser His Leu
20 25 30

Ala Trp Tyr Gln Gln Arg Pro Gly Gln Thr Pro Arg Leu Leu Ile Tyr
35 40 45

Ser Ser Ser Ser Arg Ala Ala Gly Ile Pro Asp Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu Pro Glu
65 70 75 80

Asp Phe Ala Val Tyr Tyr Cys Gln Asn Gln Gly Phe Ser Pro Arg Phe
85 90 95

Phe Phe Gly Pro Gly Thr Thr Val Asp Met Lys Arg Gly Gly Gly Gly
100 105 110

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu
115 120 125

Ser Gly Pro Gly Leu Val Lys Pro Ser Gln Ser Leu Ser Leu Thr Cys
130 135 140

Ala Ile Ser Gly Asp Ser Leu Ser Ser Asp Ser Thr Ala Trp Asn Trp
145 150 155 160

Ile Arg Gln Ser Pro Ser Arg Gly Leu Glu Trp Leu Gly Arg Thr Tyr
165 170 175

Tyr Arg Ser Thr Trp Phe Tyr Asp Tyr Ala Glu Ser Val Lys Ser Arg
180 185 190

Ile Asn Ile Asn Pro Asp Thr Ser Lys Ser Gln Phe Ser Leu Gln Leu
195 200 205

Arg Ser Val Thr Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp
210 215 220

Phe Asn Lys Gly Ala Gly Tyr Asn Trp Phe Asp Pro Trp Gly Pro Gly
225 230 235 240

Thr Val Val Thr Val Ser Ser
245

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Glu Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly Glu Arg
1 5 10 15

Ala Thr Leu Ser Cys Arg Ala Ser His Ser Val Ser Arg Ala Tyr Leu
20 25 30

Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile Tyr
35 40 45

Gly Thr Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu Pro Glu
65 70 75 80

Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Gly Ser Pro Trp Phe
85 90 95

Gly Gln Gly Thr Lys Val Glu Leu Lys Arg Gly Gly Gly Gly Ser Gly
100 105 110

Gly Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu Ser Gly
115 120 125

```
Pro Gly Leu Val Lys Pro Ser Gln Thr Leu Ser Leu Thr Cys Thr Val
    130                 135                 140

Ser Gly Gly Ser Ile Ser Thr Gly Asp Tyr Tyr Trp Ser Trp Ile Arg
145                 150                 155                 160

Gln Ser Pro Gly Lys Gly Leu Glu Trp Ile Gly Tyr Ile Ser Ser Ser
                165                 170                 175

Gly Asn Thr Tyr Tyr Asn Pro Ser Leu Thr Ser Arg Val Val Ile Ser
            180                 185                 190

Phe Asp Thr Ser Met Asn Gln Phe Ser Leu Lys Val Asp Ser Val Thr
        195                 200                 205

Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg Glu Arg Arg Val Leu
    210                 215                 220

Leu Trp Leu Gly Phe Pro Arg Gly Gly Leu Asp Tyr Trp Gly Gln Gly
225                 230                 235                 240

Thr Leu Val Thr Val Ser Ser
                245
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Met Thr Gln Ser Pro Ser Ser Val Ser Ala Ser Val Gly Asp Arg Val
1               5                   10                  15

Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Ser Trp Leu Ala Trp
            20                  25                  30

Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Asn Ala Ala
        35                  40                  45

Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser
    50                  55                  60

Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe
65                  70                  75                  80
```

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Ala Thr Tyr Tyr Cys Gln Gln Ala Asn Ser Phe Pro Leu Thr Phe Gly
                85                  90                  95

Gly Gly Thr Lys Val Glu Ile Lys Arg Gly Gly Gly Gly Ser Gly Gly
            100                 105                 110

Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu Ser Gly Ala
        115                 120                 125

Glu Val Lys Arg Pro Gly Ser Ser Val Arg Val Ser Cys Gln Val Ser
    130                 135                 140

Gly Gly Ser Phe Ser Asn Tyr Ala Val Ser Trp Val Arg Gln Thr Pro
145                 150                 155                 160

Gly His Gly Leu Glu Trp Met Gly Gly Ile Ile Pro Met Phe Asn Ala
                165                 170                 175

Pro Asn Tyr Ala Gln Lys Phe His Gly Arg Val Thr Phe Ile Ala Asp
            180                 185                 190

Glu Ser Thr Arg Thr Val His Met Glu Leu Arg Ser Leu Arg Ser Glu
        195                 200                 205

Asp Thr Ala Val Tyr Phe Cys Ala Thr Ala Ser Glu Ala Thr Glu Asn
    210                 215                 220

Asp Tyr Tyr Gln Ser Pro Thr His Tyr Tyr Ala Met Asp Val Trp Gly
225                 230                 235                 240

Gln Gly Thr Ala Val Thr Val Phe Ser Ser
                245                 250
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Gln Met Thr Gln Ser Pro Ser Phe Leu Ser Ala Ser Val Gly Asp Arg
1               5                   10                  15

Val Ser Ile Thr Cys Arg Ala Ser Gln Asp Ile Gln Lys Phe Leu Ala
            20                  25                  30

Trp Tyr Gln Leu Thr Pro Gly Asp Ala Pro Lys Leu Leu Met Tyr Ser
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35 40 45

Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly Ser Gly
50 55 60

Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Gly Leu Gln Pro Glu Asp
65 70 75 80

Phe Ala Thr Tyr Tyr Cys Gln His Leu Lys Arg Tyr Pro Tyr Thr Phe
85 90 95

Gly Gln Gly Thr Lys Leu Glu Ile Ser Arg Gly Gly Gly Gly Ser Gly
100 105 110

Gly Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu Ser Gly
115 120 125

Pro Gly Val Val Lys Pro Ser Glu Thr Leu Ser Leu Thr Cys Thr Val
130 135 140

Ser Gly Ala Ser Val Asn Asn Tyr Tyr Trp Thr Trp Val Arg Gln Pro
145 150 155 160

Pro Gly Lys Gly Leu Glu Trp Ile Gly Asn Val Tyr Asp Ser Gly Asp
165 170 175

Thr Asn Tyr Asn Pro Ser Leu Ser Ser Arg Leu Ser Leu Ser Met Asp
180 185 190

Thr Ser Lys Asn Gln Phe Ser Leu Arg Leu Ser Ser Val Thr Ala Ala
195 200 205

Asp Thr Ala Thr Tyr Tyr Cys Ala Arg Tyr His Arg His Phe Ile Arg
210 215 220

Gly Pro Leu Ser Phe Asp Tyr Trp Gly Arg Gly Thr Leu Val Thr Val
225 230 235 240

Ser Ser

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Thr Leu Thr Gln Ser Pro Thr Thr Leu Ser Ala Ser Pro Gly Glu Arg
1               5                  10                  15

Val Ile Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser His Leu
            20                  25                  30

Ala Trp Tyr Gln Gln Arg Pro Gly Gln Thr Pro Arg Leu Leu Ile Tyr
        35                  40                  45

Ser Ser Ser Ser Arg Ala Ala Gly Ile Pro Asp Arg Phe Ser Gly Ser
    50                  55                  60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu Pro Glu
65                  70                  75                  80

Asp Phe Ala Val Tyr Tyr Cys Gln Asn Gln Gly Phe Ser Pro Arg Phe
                85                  90                  95

Phe Phe Gly Pro Gly Thr Thr Val Asp Met Lys Arg Gly Gly Gly Gly
            100                 105                 110

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu
        115                 120                 125

Ser Gly Pro Gly Leu Val Lys Pro Ser Gln Ser Leu Ser Leu Thr Cys
    130                 135                 140

Ala Ile Ser Gly Asp Ser Leu Ser Ser Asp Ser Thr Ala Trp Asn Trp
145                 150                 155                 160

Ile Arg Gln Ser Pro Ser Arg Gly Leu Glu Trp Leu Gly Arg Thr Tyr
                165                 170                 175

Tyr Arg Ser Thr Trp Phe Tyr Asp Tyr Ala Glu Ser Val Lys Ser Arg
            180                 185                 190

Ile Asn Ile Asn Pro Asp Thr Ser Lys Ser Gln Phe Ser Leu Gln Leu
        195                 200                 205

Arg Ser Val Thr Pro Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp
    210                 215                 220

Phe Asn Lys Gly Ala Gly Tyr Asn Trp Phe Asp Pro Trp Gly Pro Gly
225                 230                 235                 240

Thr Val Val Thr Val Ser Ser Pro Asp Pro Glu Glu Pro Lys Ser Cys
```

245 250 255

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
260 265 270

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
275 280 285

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
290 295 300

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
305 310 315 320

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
325 330 335

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
340 345 350

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
355 360 365

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
370 375 380

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
385 390 395 400

Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
405 410 415

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
420 425 430

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
435 440 445

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
450 455 460

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
465 470 475 480

Pro Gly

<210> 16
<211> 482
<212> PRT
<213> Artificial

<220>
<223> Synthetic

<400> 16

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Glu Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly Glu Arg
1               5                  10                  15

Ala Thr Leu Ser Cys Arg Ala Ser His Ser Val Ser Arg Ala Tyr Leu
            20                  25                  30

Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile Tyr
        35                  40                  45

Gly Thr Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser
    50                  55                  60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu Pro Glu
65                  70                  75                  80

Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Gly Ser Pro Trp Phe
                85                  90                  95

Gly Gln Gly Thr Lys Val Glu Leu Lys Arg Gly Gly Gly Gly Ser Gly
            100                 105                 110

Gly Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu Ser Gly
        115                 120                 125

Pro Gly Leu Val Lys Pro Ser Gln Thr Leu Ser Leu Thr Cys Thr Val
    130                 135                 140

Ser Gly Gly Ser Ile Ser Thr Gly Asp Tyr Tyr Trp Ser Trp Ile Arg
145                 150                 155                 160

Gln Ser Pro Gly Lys Gly Leu Glu Trp Ile Gly Tyr Ile Ser Ser Ser
                165                 170                 175

Gly Asn Thr Tyr Tyr Asn Pro Ser Leu Thr Ser Arg Val Val Ile Ser
            180                 185                 190

Phe Asp Thr Ser Met Asn Gln Phe Ser Leu Lys Val Asp Ser Val Thr
        195                 200                 205

Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg Glu Arg Arg Val Leu
```

210 215 220

Leu Trp Leu Gly Phe Pro Arg Gly Gly Leu Asp Tyr Trp Gly Gln Gly
225 230 235 240

Thr Leu Val Thr Val Ser Ser Pro Asp Pro Glu Glu Pro Lys Ser Cys
245 250 255

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
260 265 270

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
275 280 285

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
290 295 300

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
305 310 315 320

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
325 330 335

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
340 345 350

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
355 360 365

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
370 375 380

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
385 390 395 400

Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
405 410 415

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
420 425 430

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
435 440 445

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
450 455 460

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
465 470 475 480

Pro Gly

<210> 17
<211> 485
<212> PRT
<213> Artificial

<220>
<223> Synthetic

<400> 17

Met Thr Gln Ser Pro Ser Ser Val Ser Ala Ser Val Gly Asp Arg Val
1 5 10 15

Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Ser Trp Leu Ala Trp
20 25 30

Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Asn Ala Ala
35 40 45

Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser
50 55 60

Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe
65 70 75 80

Ala Thr Tyr Tyr Cys Gln Gln Ala Asn Ser Phe Pro Leu Thr Phe Gly
85 90 95

Gly Gly Thr Lys Val Glu Ile Lys Arg Gly Gly Gly Gly Ser Gly Gly
100 105 110

Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu Ser Gly Ala
115 120 125

Glu Val Lys Arg Pro Gly Ser Ser Val Arg Val Ser Cys Gln Val Ser
130 135 140

Gly Gly Ser Phe Ser Asn Tyr Ala Val Ser Trp Val Arg Gln Thr Pro
145 150 155 160

Gly His Gly Leu Glu Trp Met Gly Gly Ile Ile Pro Met Phe Asn Ala
165 170 175

Pro Asn Tyr Ala Gln Lys Phe His Gly Arg Val Thr Phe Ile Ala Asp

180 185 190

Glu Ser Thr Arg Thr Val His Met Glu Leu Arg Ser Leu Arg Ser Glu
195 200 205

Asp Thr Ala Val Tyr Phe Cys Ala Thr Ala Ser Glu Ala Thr Glu Asn
210 215 220

Asp Tyr Tyr Gln Ser Pro Thr His Tyr Tyr Ala Met Asp Val Trp Gly
225 230 235 240

Gln Gly Thr Ala Val Thr Val Phe Ser Ser Pro Asp Pro Glu Glu Pro
245 250 255

Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
260 265 270

Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
275 280 285

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
290 295 300

Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
305 310 315 320

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
325 330 335

Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
340 345 350

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
355 360 365

Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
370 375 380

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn
385 390 395 400

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
405 410 415

Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
420 425 430

Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
435 440 445

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
450 455 460

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
465 470 475 480

Ser Leu Ser Pro Gly
485

<210> 18
<211> 477
<212> PRT
<213> Artificial

<220>
<223> Synthetic

<400> 18

Gln Met Thr Gln Ser Pro Ser Phe Leu Ser Ala Ser Val Gly Asp Arg
1 5 10 15

Val Ser Ile Thr Cys Arg Ala Ser Gln Asp Ile Gln Lys Phe Leu Ala
20 25 30

Trp Tyr Gln Leu Thr Pro Gly Asp Ala Pro Lys Leu Leu Met Tyr Ser
35 40 45

Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly Ser Gly
50 55 60

Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Gly Leu Gln Pro Glu Asp
65 70 75 80

Phe Ala Thr Tyr Tyr Cys Gln His Leu Lys Arg Tyr Pro Tyr Thr Phe
85 90 95

Gly Gln Gly Thr Lys Leu Glu Ile Ser Arg Gly Gly Gly Gly Ser Gly
100 105 110

Gly Gly Gly Ser Gly Gly Gly Gly Ser Val Gln Leu Leu Glu Ser Gly
115 120 125

Pro Gly Val Val Lys Pro Ser Glu Thr Leu Ser Leu Thr Cys Thr Val
130 135 140

Ser Gly Ala Ser Val Asn Asn Tyr Tyr Trp Thr Trp Val Arg Gln Pro

145 150 155 160

Pro Gly Lys Gly Leu Glu Trp Ile Gly Asn Val Tyr Asp Ser Gly Asp
165 170 175

Thr Asn Tyr Asn Pro Ser Leu Ser Ser Arg Leu Ser Leu Ser Met Asp
180 185 190

Thr Ser Lys Asn Gln Phe Ser Leu Arg Leu Ser Ser Val Thr Ala Ala
195 200 205

Asp Thr Ala Thr Tyr Tyr Cys Ala Arg Tyr His Arg His Phe Ile Arg
210 215 220

Gly Pro Leu Ser Phe Asp Tyr Trp Gly Arg Gly Thr Leu Val Thr Val
225 230 235 240

Ser Ser Pro Asp Pro Glu Glu Pro Lys Ser Cys Asp Lys Thr His Thr
245 250 255

Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe
260 265 270

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
275 280 285

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
290 295 300

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
305 310 315 320

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
325 330 335

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
340 345 350

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
355 360 365

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
370 375 380

Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
385 390 395 400

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
405 410 415

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
420 425 430

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
435 440 445

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
450 455 460

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
465 470 475

<210> 19
<211> 24
<212> PRT
<213> Artificial

<220>
<223> Synthetic

<400> 19

Met Pro Met Gly Ser Leu Gln Pro Leu Ala Thr Leu Tyr Leu Leu Gly
1 5 10 15

Met Leu Val Ala Ser Val Leu Ala
20